

# INDEX TO VOLUME XXI

JANUARY TO DECEMBER, 1917

## A

Acid Resisting Alloy .....	8318
Accelerating Sewage by Compressed Air .....	8486
Acetylene Gas Mixture, Proportions.....	8478
Aerating the Soil .....	8573 8592
Aeronautics, Commercial .....	8469
Aeroplane Disabled by Pigeons .....	8285
"    Metal .....	8317
Aeroplanes for American Army .....	8267
Aftercooler and Separator, Air Brake...	8398
Air Blast for Hardening Tools.....	8369
"    Brush for Metal Press Work.....	8294
"    Compressor, an Ingenious .....	8267
"    Coal Shell Forgings .....	8594
"    Delivery of Blowing Engines.....	8231
"    Distribution of Activated Sludge....	8247
"    Hammers in Stone Trade .....	8284
"    and Heat for Drying .....	8337
"    Hoist Piston Packing .....	8585
"    Jet Cleans Pipe Piles .....	8440
"    Measuring Instruments .....	8556
"    Meter, Clark .....	8269
"    Navigation in Wind and Fog.....	8540
"    Problem in Ice Manufacture .....	8266
"    Pure for Submarines .....	8287
"    Relief for Pump Discharge.....	8299
"    Separator, Stratton .....	8572
"    Supersedes Steam for Oil Burners..	8330
"    Tank in Garage Exploded .....	8318
"    Transmission, Graphic Solution for.	8456
"    Washing and Purifying .....	8406
"    in Water Causes Rust .....	8510
Air Lift, Mine Unwatering with.....	8343
"    "    Runs Sugar Refinery.....	8515
"    "    for Slime Pump .....	8439
"    Underground .....	8329
Aircraft Controlled by Resonance.....	8393
"    Exhibition in Washington.....	8542
"    Manufacturers Want Circulars ..	8446
Airplane Developments .....	8502
"    Record Rising .....	8563
Airplanes, Rush the .....	8473
"    and Submarines .....	8377
Alaska—Treadwell Mines Flooded.....	8390
Altitudes and Motor Conditions.....	8244
"    Various .....	8382
Aluminum Prices .....	8510
Always a Breeze .....	8253
Ancient Coal Mine Rents .....	8511
Area of Surfaces in Oxydation.....	8382
Argentina Oil Fields .....	8510
Aridity of Deserts and Schoolrooms....	8586
Artificial Flood in the Ohio .....	8568
Asphyxiation of Boilermakers .....	8286
Atmospheric Engine in Scotch Colliery.	8286
"    "    an Original .....	8419
"    "    Humidity .....	8475
"    "    Table .....	8270
Automobile Flywheel Exploded .....	8317
Aviation Developments .....	8456
"    at Three Levels .....	8542

## B

Baby Hoists Run a Derrick .....	8403
Balloon Crosses the Andes .....	8248
Balloons for Atmospheric Exploration..	8351
Bargain Time .....	8313
Bargains .....	8280
Belt Record .....	8420
Bending Rails with Pneumatic Hoist....	8309
Beneficent Thievery .....	8491
Biggest Profits on Record .....	8381
Blasting Powder Consumption of.....	8605
"    Precautions .....	8312
"    with Quicklime .....	8243
Blaugas, Advantages of .....	8571
Blower Shells Almonds .....	8254
Blowing Cotton in Factories.....	8254
"    Dust from Macadam .....	8584
"    Engines, Air Delivery of .....	8230
"    Himself up .....	8253
"    Wells .....	8443
Blowpipe, Gas and Compressed Air....	8427
Bottle Blowing Machines .....	8355
Bottom Heading for Tunnel .....	8437
Brake Pipe Leakage .....	8565
"    Vacuum Operated .....	8276
Brasher Air Breakwater .....	8286
Brewery Power Plant Transformed....	8579
British Engineers in the War .....	8300
Bureau of Mines, Publications .....	8570
"    "    Technical Men in..	8446
By Product Potash .....	8408
By Products of Metallurgy .....	8378

## C

Calories in Sugar .....	8350
Calumet and Hecla Fifty Years Old....	8236
Canal Tunnel in France .....	8227
Caproni Triplanes .....	8542
Carbon Monoxide, Paradoxical .....	8436
"    "    Test for .....	8456
Care of Pneumatic Tools .....	8314
Carelessness .....	8317
Cellulose Piping .....	8543
Cement Gun Lines Smokestacks....	8317, 8408
"    "    Repairs Sea Wall .....	8527
"    "    Saves Big Chimney .....	8435
Chalk- Supply Shortage .....	8382
Changes in Ingersoll-Rand Co.....	8510
Channel Tunnel not yet .....	8605
Chart for Air Consumption of Drills....	8342
Cheap Explosives .....	8414
"    Tie Tamping .....	8507
Chemists in Wholesale Research .....	8570
Chills, Colds, Ventilation .....	8246
Chip Separator .....	8349
Chlorine and Typhoid .....	8438
Clamping Devices, Pneumatic .....	8397
Clark Air Motor .....	8269
Clay Cut by Pneumatic Hammers.....	8414
Cleveland Waterworks Gas Explosion...	8458

Coal Picks, Tunneling with .....	8311
“ Workings Pay Cost of Tunnel....	8536
College Mining Session, Students.....	8318
Colliery Aid Training in War.....	8403
Common Sense on Metric System.....	8401
“ “ Scarcity of .....	8442
<i>Commonwealth of Pennsylvania</i> .....	8603
Compressed Air as a Coolant .....	8335
“ “ at Gasoline Stations..	8318
“ “ and Legislation .....	8346
“ “ for Metal Press Work .....	8315
“ “ “ Salvaging Ships.....	8237
“ “ “ Track Work.....	8294
“ “ in Trench Mortars .....	8585
“ “ Missionary .....	8366
“ “ Practice in Mining....	8570
“ “ Saving .....	8570
“ “ in a Tannery .....	8323
“ “ Workers, Guardianship of .....	8491
<i>Compressed Air, New Book</i> .....	8444
Compressed Gas as Motor Fuel .....	8240
Compressor Indicator Diagram.....	8240
“ Operating, Safe .....	8395
“ Plant, Gulf Coast .....	8426
“ Thirty Years Old .....	8390
Compressors, Air Delivery of .....	8470
“ Old Superseded by New..	8387
Concrete, Conveying in N. Y. Subway..	8464
“ To Stop Leakage Through....	8413
Cordite a Drug .....	8447
Cork Fabric .....	8414
Cost of Compression by Different Drives	8391
Cotton Fibre in Explosives .....	8446
Counterbalanced Drill Holder .....	8341
Crankshaft Forging for Airplane.....	8462
Crimmins, John D.....	8601
Culebra Cut .....	8287

## D

Danger of Reversing Air Currents.....	8605
Decompression Regulations .....	8282
Deepest Drill Hole .....	8254
“ Well .....	8379
Disinfectors for Army Clothing.....	8414
Diving Bell at Halifax .....	8524
Dollar, Multiple Functions of .....	8446
Driest Place in the World .....	8510
Drill Holes and Blasting Charges.....	8535
“ Mounting for Sheets .....	8469
“ Rock, Underground .....	8558
“ Runner's Troubles .....	8568
“ Sharpener, Jacksteel .....	8374
“ Sharpening at United Verde .....	8291
“ Speed, Reducing .....	8427
“ Speeding up the .....	8559
“ Steel Record .....	8605
Drills, Air Consumption of.....	8342
“ Efficiency of .....	8553
Drilling Contest .....	8477
Driving Screw Spikes .....	8399
Drop it Till the War is Over.....	8409
Drying, Air and Heat for .....	8337
“ Money .....	8534
Dust Collecting Wholesale .....	8301
“ in Explosive Mixtures .....	8380
Dynamite, Kinds of .....	8286
“ Saves a Crop .....	8447

## E

Ear Defenders .....	8382
Efficiencies, Intercooler .....	8301
Efficiency of Drills .....	8553
Egg Preserving Patent .....	8315
Electrolytic Oxygen Dangerous .....	8367
<i>Elements of Refrigeration</i> .....	8250
Engineer Salesman .....	8443
“ Saves the Macaroni .....	8230
Engineering Association of the South Discontinued .....	8318
English Channel Tunnel .....	8254
Explosion, Industrial Oxygen .....	8520
Explosive Mixture, Dust in .....	8380
Explosives for Quarries .....	8299
“ Law .....	8603
“ War Status of .....	8599
Exports Increased by War.....	8572

## F

Fan Testing, Pressures for .....	8310
Fish in Deep Gold Mine .....	8286
Five Inch Holes by Hammer Drills....	8517
Flying in Clouds .....	8583
Forgings, Sand Blast for Cleaning....	8431
French Coal Mines in War .....	8398
Friction of Rubber Tires .....	8605
Fuel Oil, Large Order for .....	8510
Fungus Makes Brown Oak .....	8286

## G

Garbage, N. Y. City .....	8606
Gas, Artificial, Record for 1915.....	8287
“ Burner for Industrial Work.....	8235
“ Compression Plant .....	8285
“ Consumption, U. S.....	8413
“ Distribution .....	8366
“ Explosion, Cleveland Waterworks.	8458
“ and Gasoline Sewer Explosion....	8334
“ for Incubators .....	8376
“ Holder Dangers .....	8441
“ Pressure Reducer .....	8382
Gases in Trench Warfare .....	8426
Gaseous Mixtures, Proportions of.....	8472
Gasifying Crude Oil .....	8598
Gasoline and Air .....	8253
“ Casing Head .....	8443
“ Consumption of Automobiles..	8230
“ Extraction .....	8413
“ Locomotives in Mines .....	8255
“ from Natural Gas .....	8317
“ Saves Linotype .....	8312
Grain Elevators, Pneumatic .....	8268
Graphic Solution of Air Problems.....	8456
Gulf Coast Compressor Plant.....	8426
Gun Temperature and Wear.....	8382

## H

Halifax, Deep Water Piers .....	8237
“ Work of Diving Bell.....	8524
Hammer Drill Bit Tests .....	8528
“ “ Resents Abuse .....	8509
“ Drills Make 5 Inch Holes.....	8517
Hand Dug Oil Wells in Japan .....	8525
“ Process for Window Glass .....	8357
Hawaiian Irrigation Product .....	8606
Heat Neutralizing Mixture .....	8446

High Air Pressures in Converters.....	8316
“ Explosives in Metal Mining.....	8568
“ Flying .....	8551
“ Pressure Gas for Power.....	8561
“ “ in Pneumatic Caissons.....	8381
Hippodrome Ice Plant .....	8278
Hoist with Oscillating Cylinders.....	8283
Home-Made Compressor Rig .....	8507
Hose, Tight Winding for.....	8433
How it Feels to be Gased .....	8518
“ the Windows Were Broken.....	8250
“ to Run An Automobile.....	8413
Humidifying Oven Atmosphere .....	8439
•Humidity, Atmospheric .....	8475
“ Problem .....	8345
“ Table .....	8270
Hydraulic Laboratory Compressor.....	8368

## I

Ice Making Process, New .....	8270
“ Manufacture, Air Problem in.....	8266
Income Tax Procedure .....	8314
Indicator Diagrams from Compressor..	8240
Inflammable Limits of Mixtures .....	8282
Ingenious Air Compressor .....	8267
Injurious to the Eye .....	8350
Intercooler Efficiencies .....	8331, 8410
“ What it can do .....	8421
Irrigation Companies in California ....	8510

## J

Jackhammer Mounting .....	8497
“ World Record .....	8280
Japan Building Locomotives .....	8435

## L

Laboratory Compressor, Hydraulic ....	8368
Lassen Peak .....	8286
Letter Describing Tunnel Work .....	8281
Leyner Jacksteel Sharpener .....	8374
“ Shank and Bit Punch.....	8567
Liberty Loan Co. ....	8605
“ Motor .....	8603
Lincoln Air Way .....	8433
Liquid Fire in the War .....	8472
“ Grease .....	8381
Little David Bores Big Cylinder .....	8435
“ “ in Automobile Factory.....	8526
Locomotive Whistle, the First .....	8253
Low Bid, the .....	8563
Lubrication of Pneumatic Tools .....	8314
“ Rock Drills .....	8333
Lumber Contract, Enormous .....	8606

## M

Machine Process for Window Glass....	8359
Magnet Steel .....	8414
Manganese Steel Shrinkage .....	8405
Marietta Process for Oil Wells .....	8442
Marine Oil Engines, Cost of .....	8351
Measuring Wind Forces .....	8242
Mechanical Refrigeration .....	8376
Mechanical World Pocket Book.....	8314
Metal Production in U. S. ....	8542
Metering of Air, Gas and Steam .....	8373
Metric Conversion Chart .....	8298
“ Myths, Six .....	8381

“ System, British Authority on....	8350
“ “ Common Sense on.....	8401
“ “ Dangers of .....	8467
“ “ Drop it Till War Is .....	8409
“ Over .....	8318, 8478
“ “ Optional .....	8483
Milk Bottle Factory .....	8478
Mine Fires, to Extinguish .....	8560
“ Rescue Experts .....	8254
Mining Employs All Classes .....	8593
“ Engineers War Exploits .....	8478
“ Propositions Profitable .....	8287
“ Stock, Highest Value .....	8366
Missionary, Compressed Air .....	8351
Molasses for Explosives .....	8605
“ Uses of .....	8245
Molding Machine, Pneumatic .....	8586
“ Machines .....	8270
“ “ in English Foundries .....	8255
Montreal Water Engineering .....	8507
Motor Cars in Great Britain .....	8478
“ “ U. S. ....	8244
“ Conditions at Altitudes .....	8351
“ Vehicle Development .....	8505
Mountains Sustained by Flotation.....	8542
Mud Holes Drained by Drilling .....	8296
Mushrooms in Abandoned Tunnels ....	

## N

Natural Gas in U. S. Industries .....	8537
Naval Consulting Board on Submarines ..	8419
Newcomen Pumping Engine .....	8478
Nitro-Glycerin Kills Oil Man .....	8380
Noiseless Foghorn .....	

## O

Oil Handled by Compressed Air.....	8438
“ Wells, Compressed Air Helps .....	8442
Old and New in Rock Drills .....	8381
“ L Engines in Mine Service .....	8491
“ Soap Bubbles .....	8283
Oscillating Cylinder Hoist .....	8248
Oxy-Acetylene Welding, Cost of .....	8367
Oxygen, Electrolytic, Dangerous .....	8520
“ Explosions, Industrial .....	

## P

Passengers in N. Y. Subway .....	8446
Patents—8255, 8287, 8319, 8351, 8383, 8415,	
8447, 8479, 8511, 8543, 8575,	8606
Peanut Brittle for the Soldiers .....	8510
Periscopes, Nickel Plated .....	8317
Permanent Magnet Manufacture .....	8487
Pine Mountain Tunnel Record .....	8555
Piston Area Chart .....	8585
“ Packing for Air Hoist .....	8370
Pneumatic Chisels for Steel Billets.....	8397
“ Clamping Devices .....	8462
“ Concentrator .....	8305
“ Conveyor for Slack .....	8268
“ Grain Elevators .....	8509
“ Hammer, Barr .....	8309
“ Hoist Bends Rails .....	8249
“ Mail Tubes .....	8245
“ Molding Machines .....	8605
“ Pulley for Sand Belts .....	8408
“ Stage Furniture .....	8279
“ Tampers Cut Labor Cost ....	

" Tampers, Various Uses of..	8232
" Tires Best .....	8526
" Tools in Shipyards .....	8595
" " on Street Railway	
Work .....	8451
" Traveling Hoist .....	8467
" Tubes in Freight Yard .....	8506
Potash .....	8444
Powdered Coal Conditions .....	8447
Power from a Gallon of Gasoline .....	8605
" Losses in Pneumatic Tires .....	8556
" Squeezers .....	8586
Precedents and Progress in Tunneling..	8282
President's Thanksgiving Word .....	8601
Pressure and Vacuum Wood Preserving	8306
Pressures for Fan Testing .....	8310
Principles of Iron Founding .....	8603
Publications, Bureau of Mines .....	8444
Pulleys Shielded to Stop Air .....	8446
Pulmotor Saves Newborn Babe .....	8287

## Q

Quarrying by British Army .....	8536
" Sandstone .....	8429
Quicklime, Blasting with .....	8243

## R

Rabbit Skins .....	8473
Rafelita, or Dry Petroleum .....	8542
Railroad in Chile and Bolivia .....	8516
" Land Cultivable .....	8464
" New in Peru .....	8542
" Trains for Armies .....	8446
Railroads Increase Freight Service....	8605
Rapid Drifting .....	8571
Rare Metals in Gold Bullion .....	8478
Refrigeration to Ripen Fruit .....	8507
" by Vacuum .....	8404
" Mechanical .....	8376
Reservoir Enlargement, Trap Falls....	8259
Resonance to Control Aircraft .....	8393
Resuscitation Chart .....	8507
Revolving Door for Sand Blast.....	8435
Rio Tinto Mine in Antiquity .....	8478
Rock Drills, Old and New in.....	8272
" " in Witwatersrand .....	8381
" Work on Storm King .....	8228
Rocks Tell their History .....	8248
Roeber, Eugene Franz .....	8602
Rope Drive of High Velocity.....	8605
Rubber Sponge .....	8293
Rush the Airplanes .....	8473
Russian Weights and Measures.....	8356

## S

Safe Compressor Operation .....	8395
Safety Inspector and Surgeon Cooperate	8414.
" Step for Railroad Cars .....	8527
Same Pressure at Oil Well .....	8279
Sand Blast for Cleaning Forgings.....	8431
" " File Sharpener .....	8315
" " Practice .....	8547
" Hog Decompression .....	8282
Sandstone Quarrying .....	8429
Saving by Compressed Air .....	8253
" Compressed Air .....	8570
" by Scrapping Compressors .....	8387, 8539
Scarcity of Common Sense .....	8442

School for Women Welders .....	8606
Scientific Deduction Versus Imagination	8440
Screw Spikes, Driving .....	8399
Second Simplon Tunnel .....	8447
Self Starter for Aeroplanes .....	8255
Semi-Steel .....	8255
Separator for Air Line .....	8275
Sewage Accelerated by Compressed Air	8486
Sewer Explosions .....	8364
Shaft Sinking Record .....	8508
Shell Forgings Cooled by Air.....	8594
Shells in the War .....	8542
Shipyards, Pneumatic Tools in.....	8595
Siberian Railway Opens a Coal Field..	8573
Siphon, Controlling a .....	8428
Siphoning Mine Water .....	8564
Sludge, Air Distribution in .....	8247
Smoke .....	8560
Snowslide Destroys Compressor House	8351
Soap Bubbles, Old .....	8471
Soil Aeration .....	8592
Solders .....	8414
Some Mining Truths .....	8269
Sometimes .....	8248
Special Air and Special Results.....	8539
Specific Gravity Balance for Gases....	8364
Speed Reducer for Drills .....	8427
Spellerizing .....	8495
Spontaneous Ignition of Powdered Coal	8286
Springing of Blast Holes .....	8295
Stack, Biggest .....	8305
Steam Hammer Converted to Air.....	8555
Stellate .....	8445
Storm King Highway Rock Work.....	8228
Strainer for Compressor Intake.....	8347
Straw Modified by Location .....	8447
Stratton Air Separator .....	8572
Street Numbers in Pernambaco.....	8510
Street Railway Work, Pneumatic Tools	
on .....	8451
Students from South America .....	8228
Submarines and Naval Consulting Board	8537
Success of the Drill Wagon .....	8508
Suction Control, Automatic .....	8439
" Elevators for Small Coal.....	8280
Sugar Beets Must Breathe .....	8279
Sulphuric Acid from Smelter Fumes....	8317
Surface Area of Sands .....	8318
Systematic Supervision of Drills .....	8309

## T

Tallest Chimney .....	8543
Tests of Hammer Drill Bits.....	8528
Thermaline .....	8376
They Mean Business .....	8551
Tie Tamping on D. L. & W.....	8580
Timber in Twin Peaks Tunnel .....	8255
Tight Winding for Hose .....	8433
Too Much of a Hurry .....	8490
Track Tamping in Denver .....	8542
Transformation of Power Plant.....	8579
Trap Falls Dam Reconstruction.....	8259
Tree Grows in Old Chimney.....	8317
Trolley Accident, Remarkable .....	8543
True Old Friend .....	8568
Tunnel, English Channel .....	8254
" under the Bosphorus .....	8287
" Driving Record .....	8487
" Latest and Greatest .....	8227
" Lining, Pneumatic .....	8382



" with Bottom Heading .....	8437
" Paid for by Coal Taken Out....	8536
" Proposed 13 Miles Long.....	8472
" Worker Heroes .....	8318
Tunnels for Greater N. Y. ....	8474
Tunneling with Coal Picks .....	8311
" Progress in .....	8282
" at its Worst .....	8327
Twist in National Tube .....	8375
Two Things Less and Greater .....	8278
" Views of Liberty Motor .....	8603

## U

Uncle Sam's Millions and Uncle Sam's Men .....	8408
Underground Air Lift .....	8329
" Drill Rack .....	8558
GAL. FOUR—Index .....	
Unloader Saves Power .....	8336
Unnecessarily Vulnerable .....	8441
U. S. Resources .....	8413
Utilizing Cartridge Cases .....	8285

## V

Vaccine for Pneumonia .....	8536
Vacuum Cleaner Experiences .....	8501
" Operated Brake .....	8276
" Refrigeration .....	8404
Vanadium .....	8285
Velocity of Sound in Water .....	8318
Ventilation, Chills, Colds .....	8246
" and Tunnel Progress.....	8586

Vise for Machine Shop .....	8239
-----------------------------	------

## W

War Exploits of Mining Engineer .....	8593
" Scrap .....	8265
Water Forced by Air .....	8440
" at Same Pressure as Air.....	8425
" Pumped in Holland .....	8235
" Supply, Panama Canal .....	8376
Weeds on Railroads, Killing .....	8344
Welded Gas Main .....	8580
" Joints Investigated .....	8542
" Piping .....	8605
Well, Deepest .....	8379
What the Intercooler Can Do .....	8421
" is Man? .....	8254
Where We All Stand .....	8377
Why We Are at War .....	8569
Wind Forces, Measuring .....	8248
" Power .....	8434
Window Glass by Machine .....	8359
Windows, How Broken .....	8250
Wood Pipe .....	8382
" Preserving, Pressure and Vacuum	8306

## Y

Your Dear Lad and My Dear Lad.....	8600
------------------------------------	------

## Z

Zinc Sulphite .....	8446
---------------------	------